

Candida auris

Candida auris epidemiology

What is *C. auris*?

- *C. auris* is an emerging and often multidrug-resistant fungus
- First discovered in 2009
- Made nationally notifiable in 2018
- Added to Texas Notifiable Conditions List in 2021

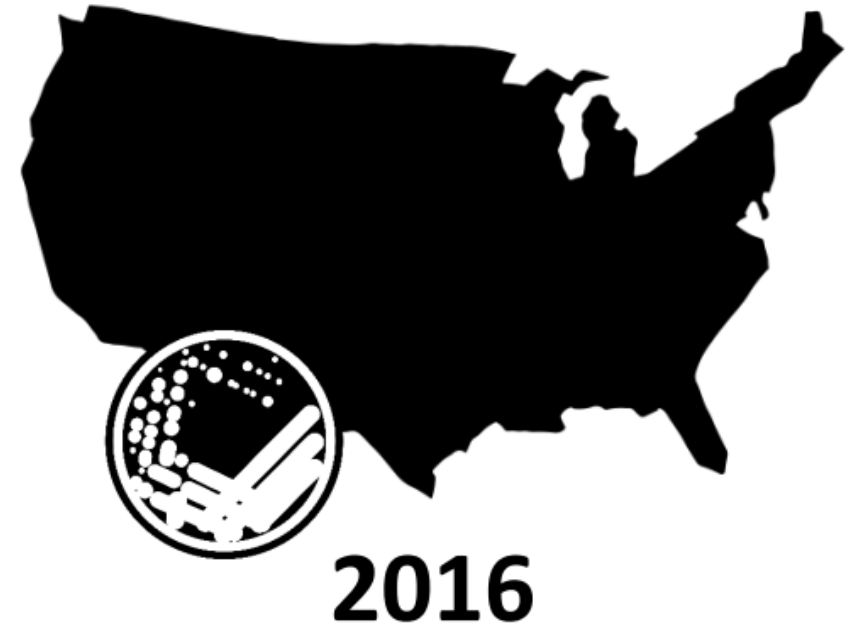
1. Candida auris (C. auris) is a type of yeast/fungus that can cause severe illness.
2. • It is often resistant to antifungal treatments.
3. • It spreads very easily in healthcare settings through direct contact.
4. • It is hardy in the environment and can survive for weeks on surfaces
5. • Patients may be colonized with C. auris and asymptomatic.

First reported in Japan and now, worldwide

Japan



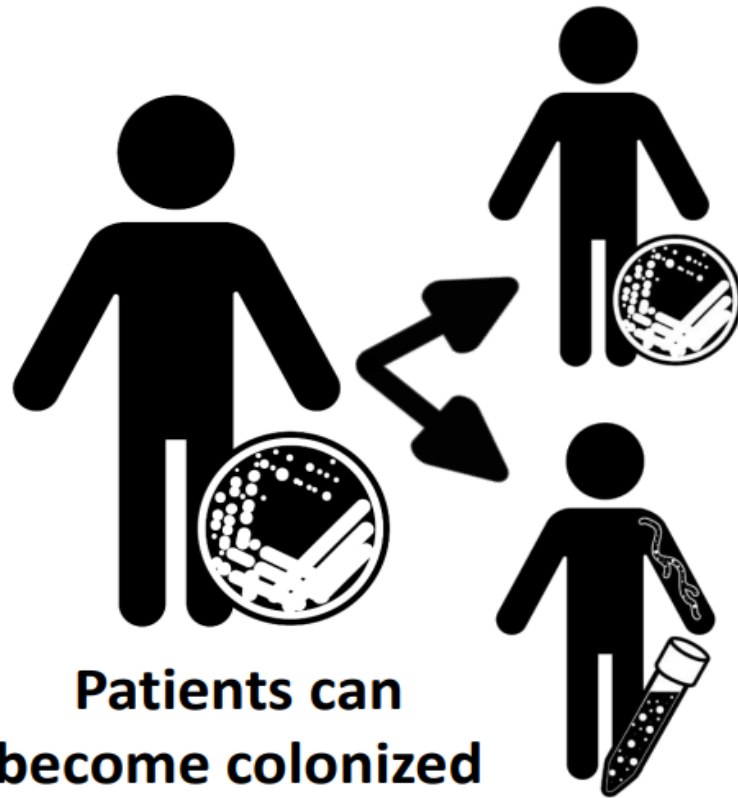
United States



Why are we concerned about *Candida auris*?



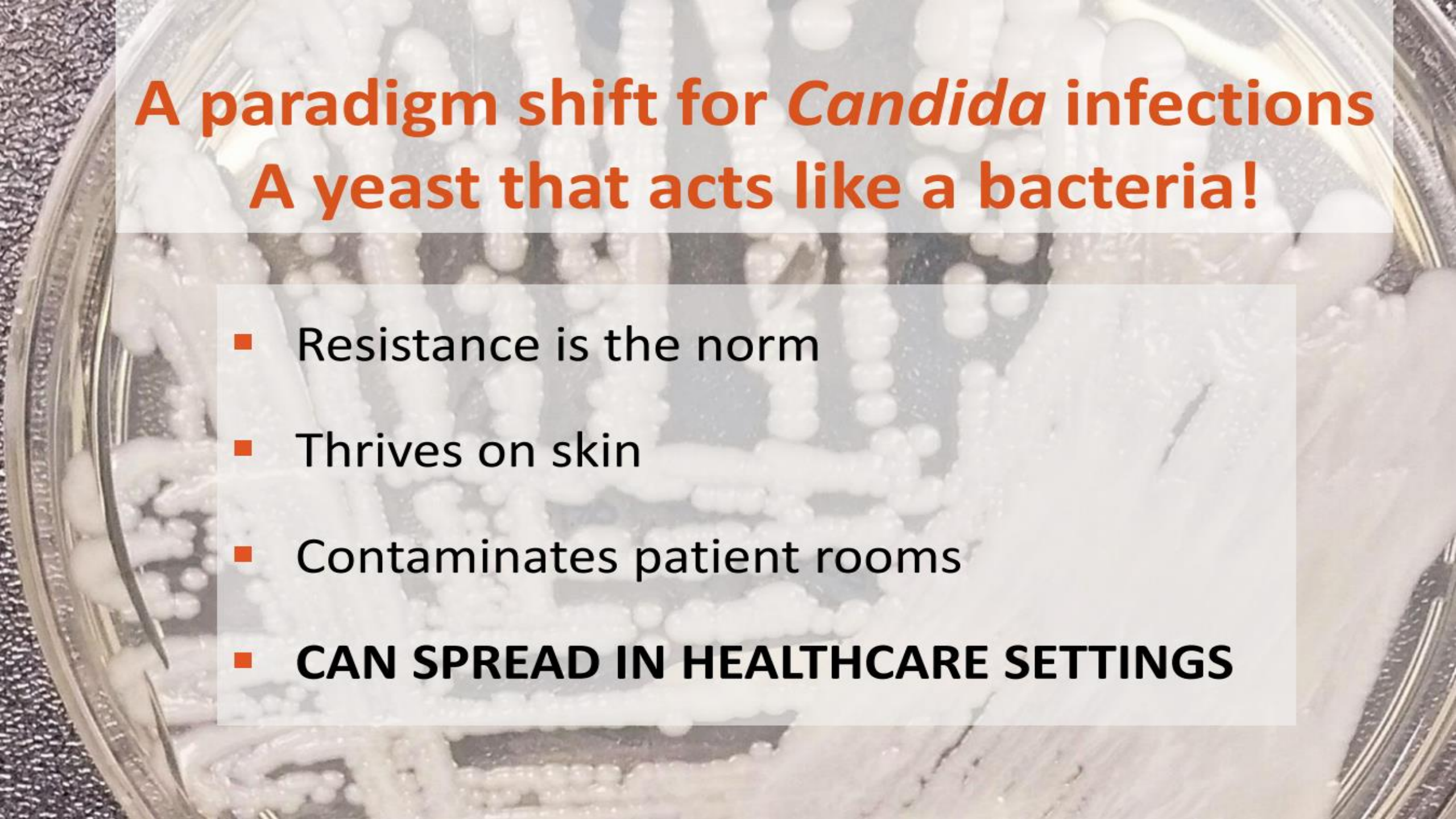
Highly
drug-resistant



Patients can
become colonized
and develop
invasive infections



Spreads in healthcare
settings

A close-up photograph of a petri dish containing a culture of Candida. The colonies are numerous, small, white, and fuzzy, growing in a circular pattern on a dark agar surface. The petri dish is made of clear plastic with a metal rim.

A paradigm shift for *Candida* infections

A yeast that acts like a bacteria!

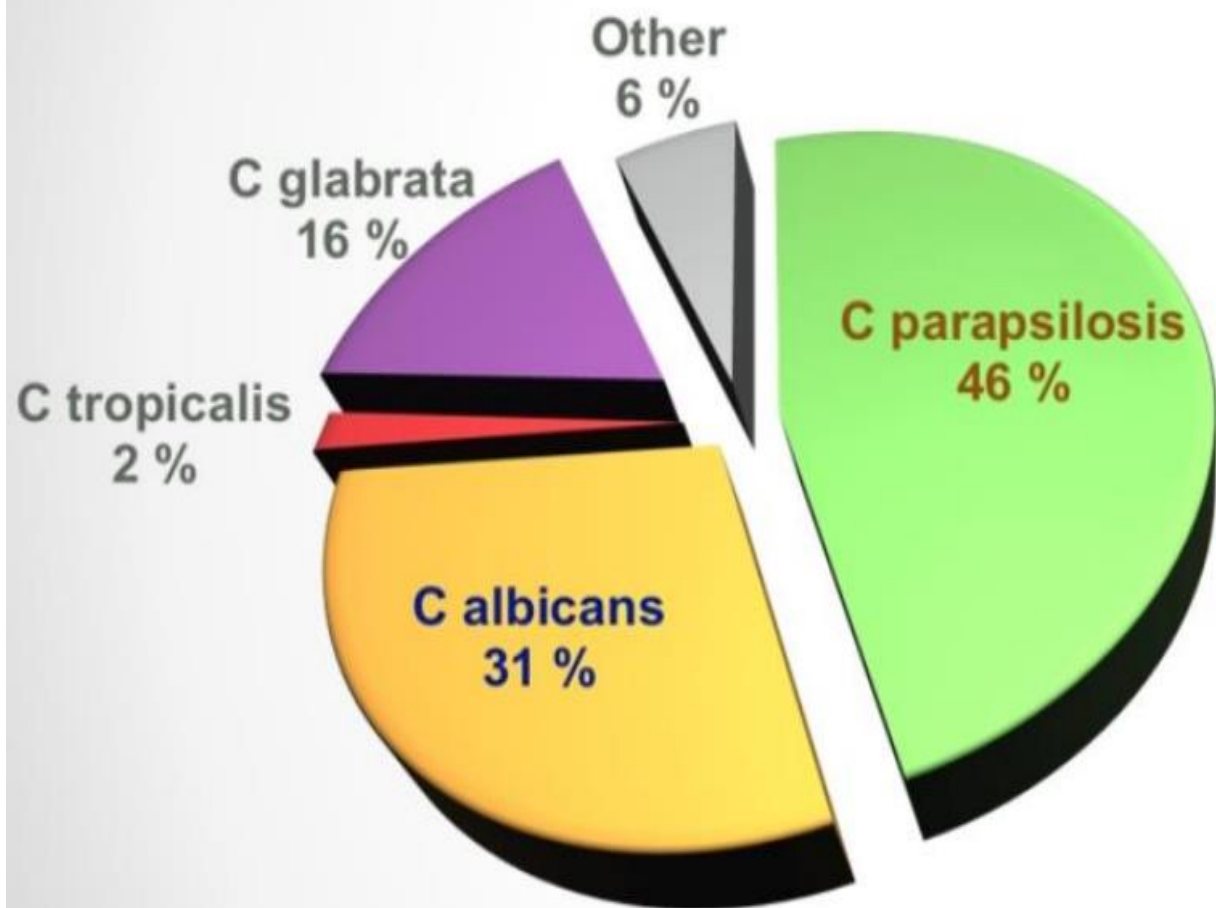
- Resistance is the norm
- Thrives on skin
- Contaminates patient rooms
- **CAN SPREAD IN HEALTHCARE SETTINGS**

***C. auris* cases have been reported in >30 countries**

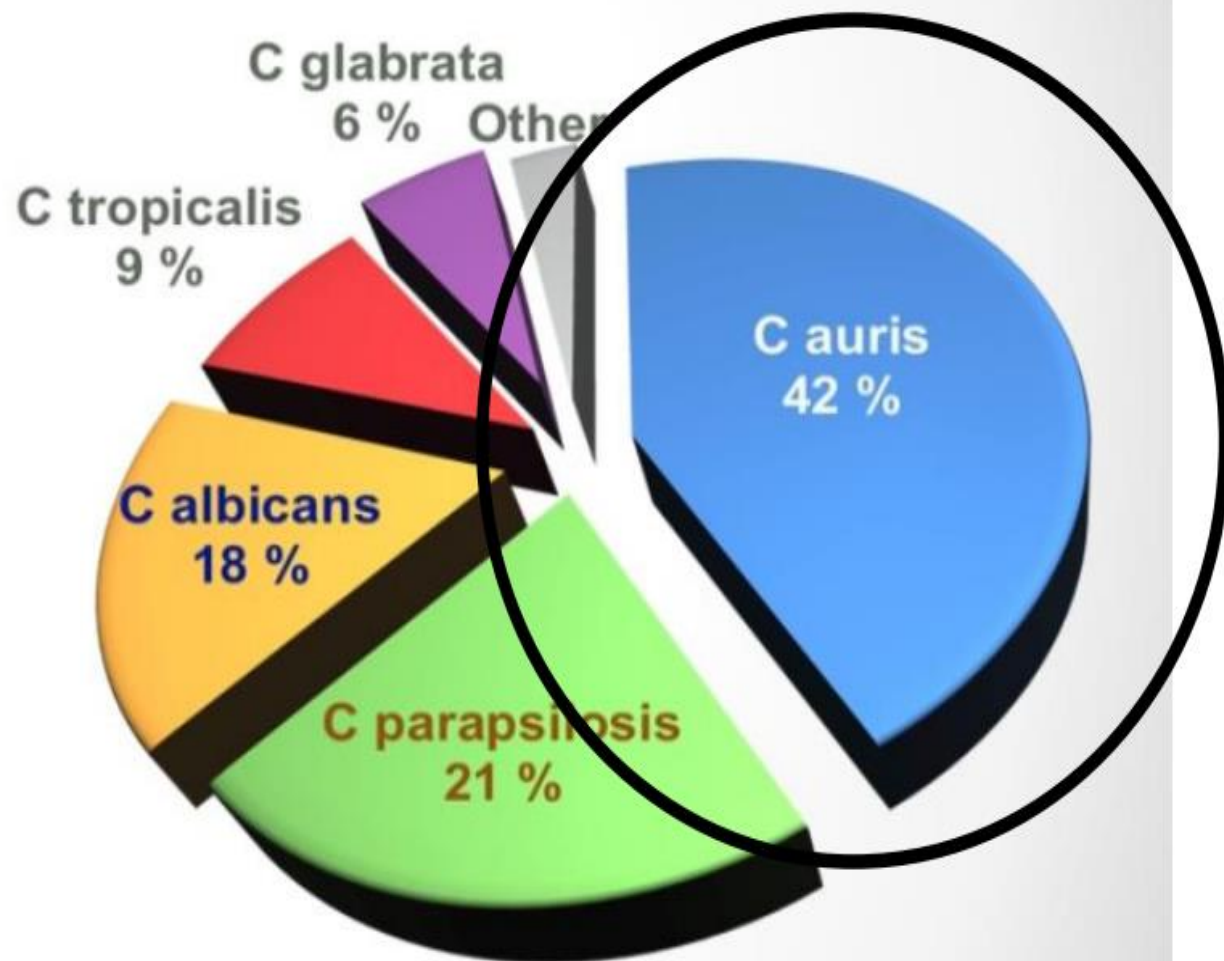


Spain Outbreak (2016-2017)

Pre – April 2016 (n=154)



Post April 2016 (n=154)



Why is C. auris a problem?

Causes dangerous infections

- Can cause bloodstream infections and death, particularly hospital and nursing home patients with serious medical problems
- Resistant to medicines
- Antifungal medicines commonly used to treat Candida infections often do not work for C. auris
- Some C. auris infections resistant to all three types of antifungal medicines
- Referred to as Multi-Drug Resistant Organisms (MDROs)

C. auris Morbidity and Mortality

5-10% of colonized patients develop bloodstream infections.



Mortality of invasive infections is ~40% within the first 30 days.

Why is C. auris a problem?

1. Difficult to identify

- Often misidentified as other types of fungi unless specialized laboratory technology used
- Misidentification might lead to patient getting wrong treatment

2. Easily spread in hospitals and nursing homes

- Caused outbreaks in healthcare facilities and can spread through contact with affected patients and contaminated surfaces or equipment

3. Persists on surfaces

- Good hand hygiene and cleaning in healthcare facilities is important because *C. auris* can live on surfaces for several weeks

Risk factors for C. auris

1. Tracheostomies
2. Ventilator-dependent
3. Colonized with other multidrugresistant organisms
4. Recently received antibiotics and antifungals
5. Immunosuppressive conditions
6. Medical device use – Tracheostomy/Ventilator
7. Frequent or prolonged stays in healthcare facilities

Not a threat to general public or
healthy individuals

Infection vs. Colonization

Infection

- Presence of signs and symptoms
- Bloodstream, wound, and ear infections have been documented
 - Lung and bladder infections?
- Treatment is usually necessary
- Requires use of Transmission-based Precautions

Colonization

- No signs or symptoms detected or reported
- May occur on skin, nares, oropharynx, rectum, and other body sites
- No treatment necessary
- Requires use of Transmission-based Precautions

Stays in certain types of post-acute care facilities is a major risk factor: vSNFs and LTACHs

C. auris prevalence in nursing home units with ventilator beds



7.7%

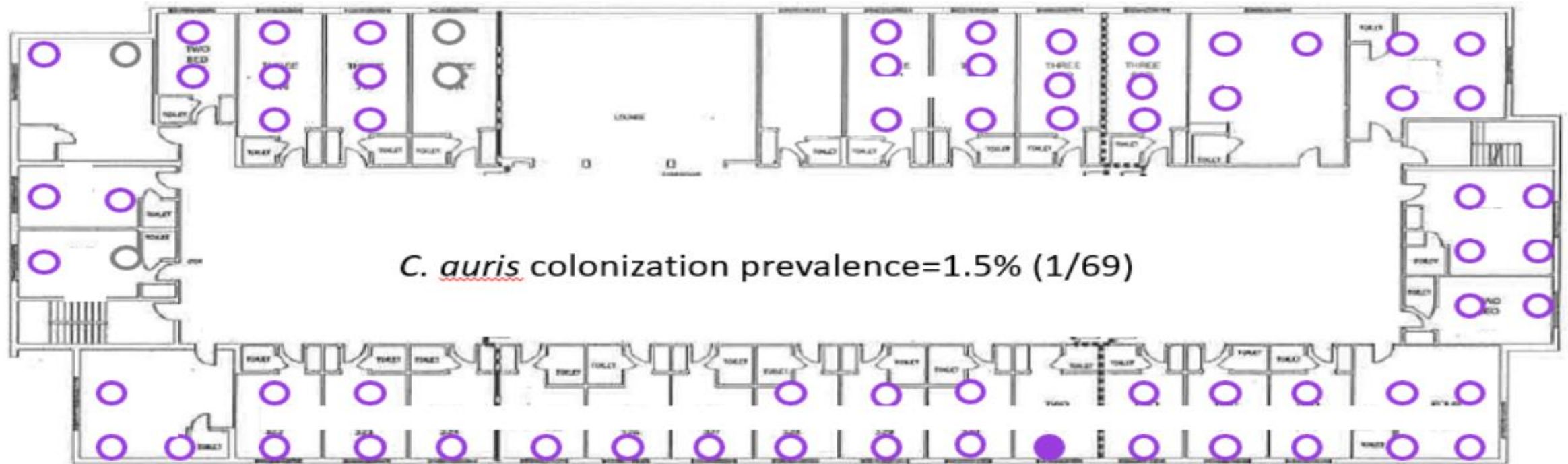
C. auris prevalence in regular nursing homes



0.7%

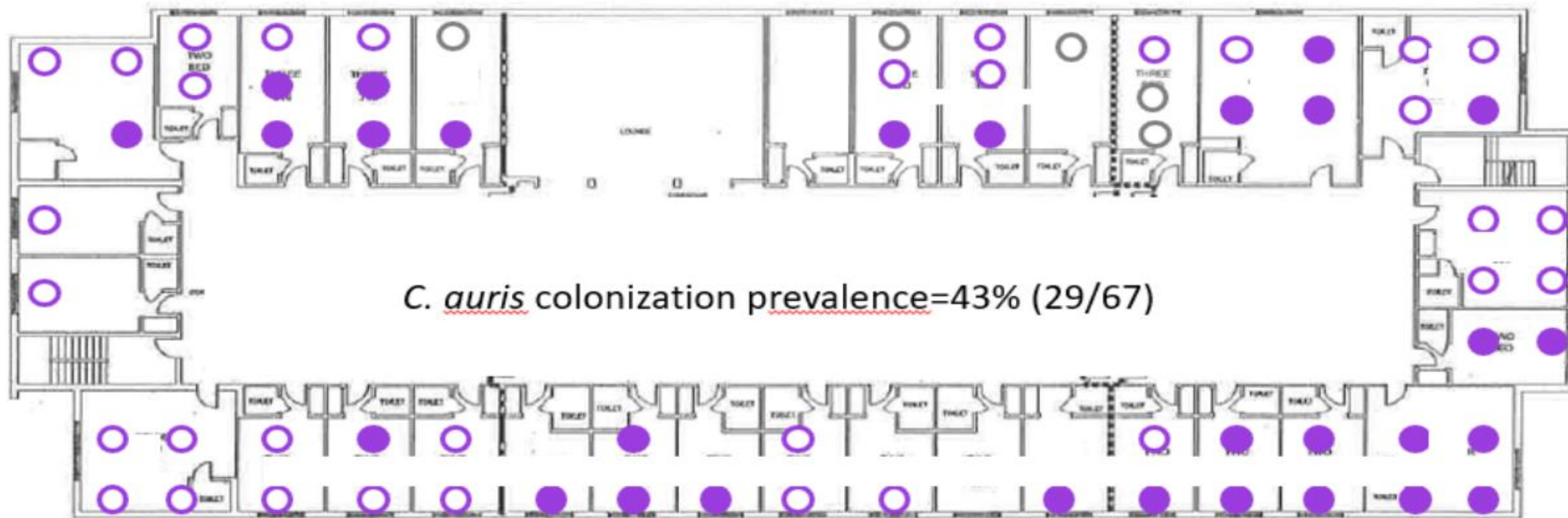
vSNF A Ventilator/Trach Floor

March 2017 *C. auris* PPS Results



- *C. auris* positive
- Screened negative for *C. auris*
- Not tested for *C. auris* (refused or not in room)

vSNF A Ventilator/Trach Floor **January 2018 *C. auris* PPS Results**

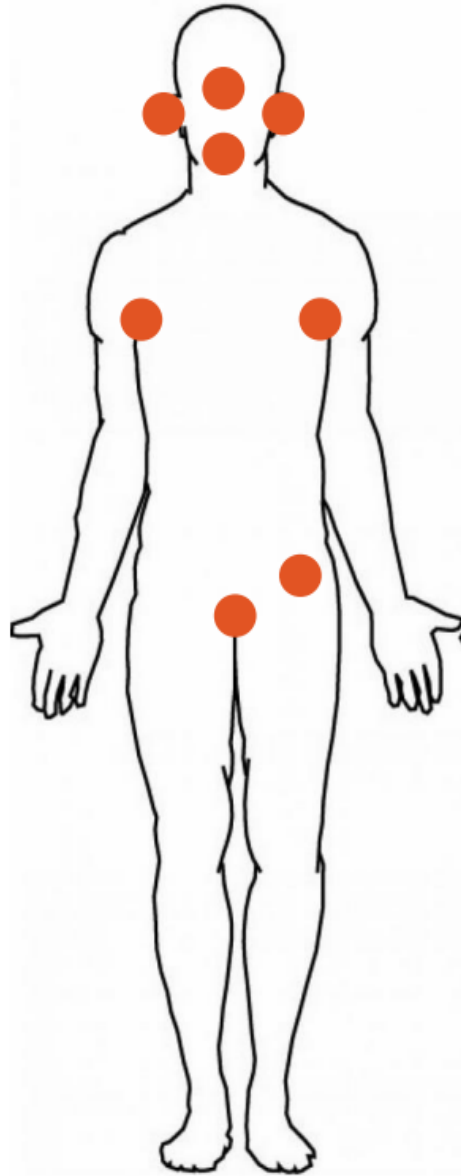


C. auris colonization prevalence=43% (29/67)

- *C. auris* positive
- Screened negative for *C. auris*
- Not tested for *C. auris* (refused or not in room)

Patients are often colonized indefinitely

- Primarily on skin, but nares and other body sites also can become colonized
- Persistent, for many months
- No currently known decolonization strategies

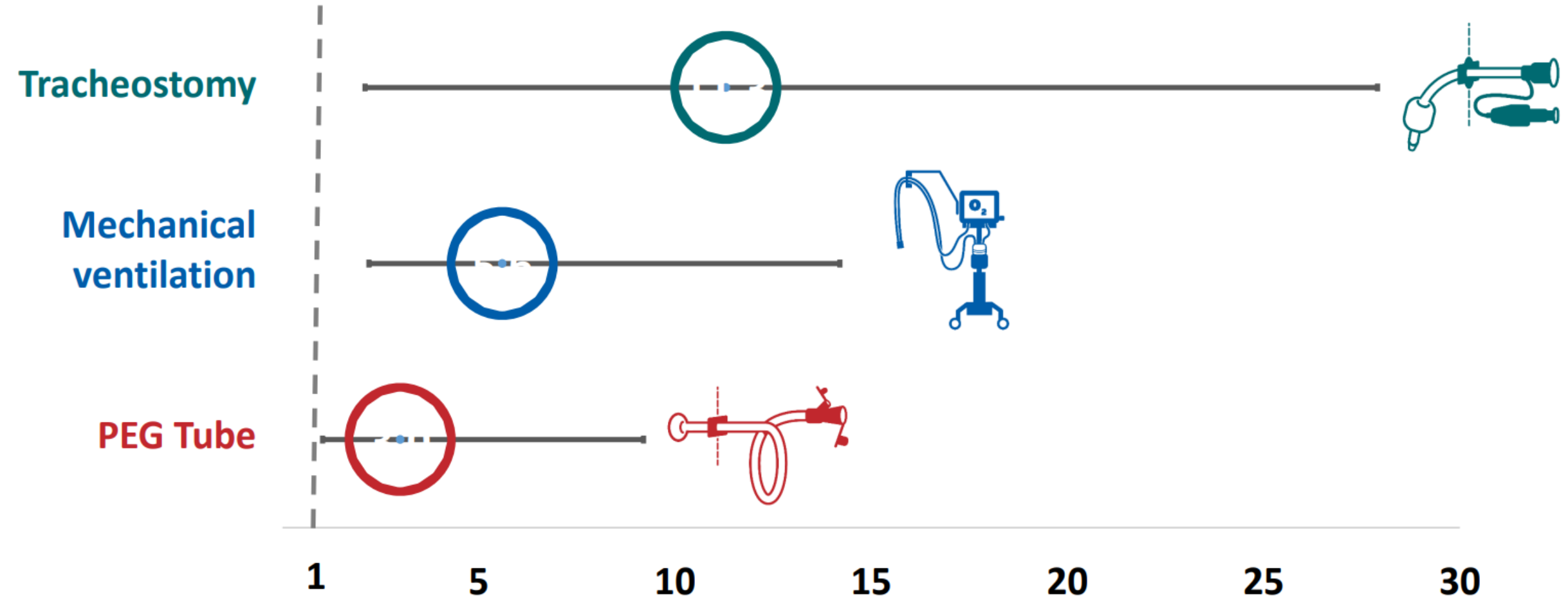


- Leads to:
 - Invasive infection
 - Transmission to others

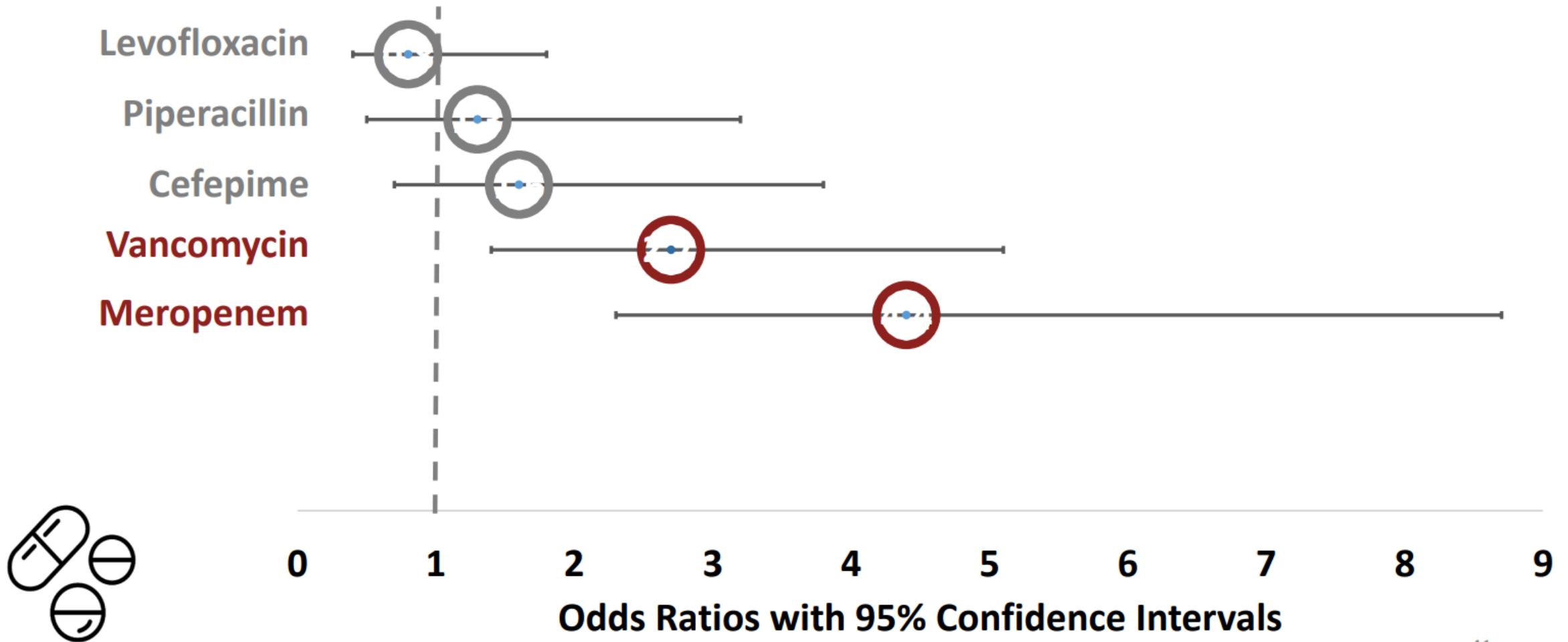
Colonization

- May be persistent and/or intermittent
- Usually lasts months to years and may be indefinite
- No well-established decolonization strategies
- Clearance testing not recommended
- May lead to invasive infection in 5 – 10% of cases
- Those with clinical infection may remain colonized even after treatment
- Can lead to transmission and subsequent outbreaks
 - High levels of shedding
 - Recontamination of surfaces within 4 hours¹

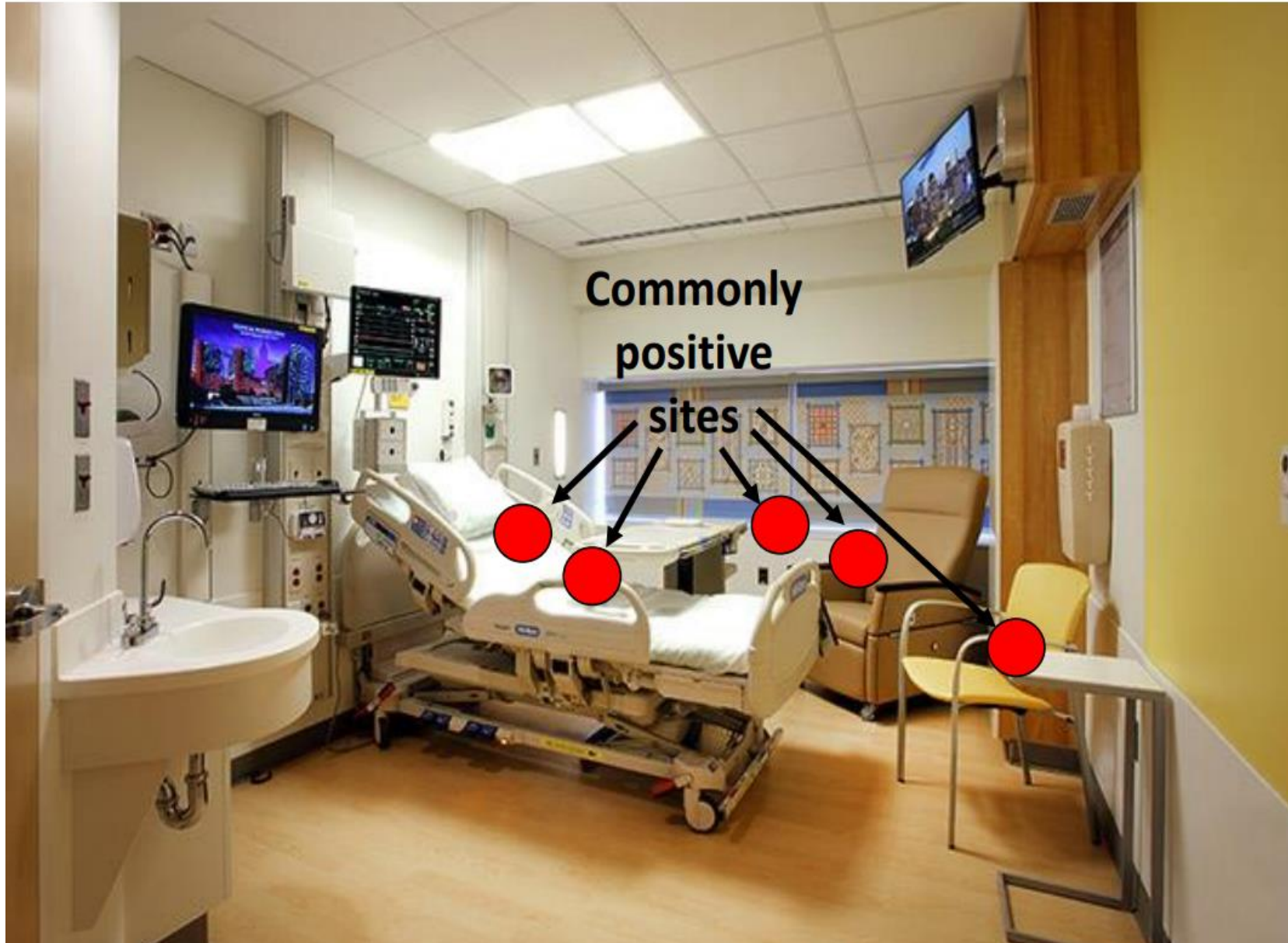
Tracheostomy, ventilation, and PEG tubes were associated with colonization.



Certain broad-spectrum antibiotics were associated with *C. auris* colonization.



C. auris persists in the environment

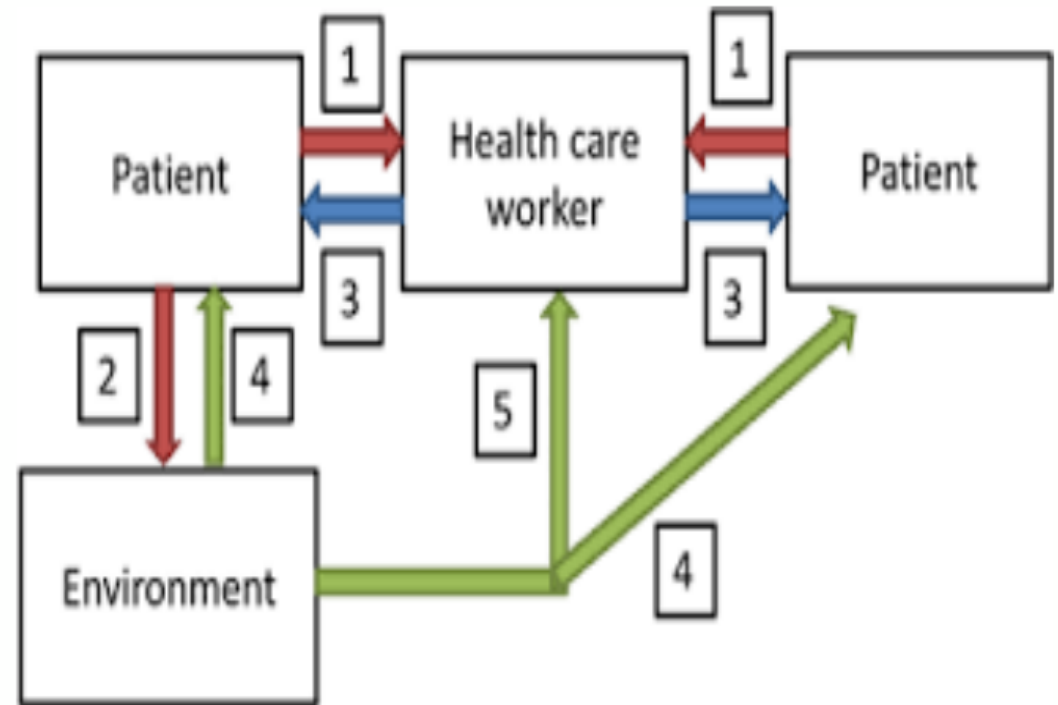
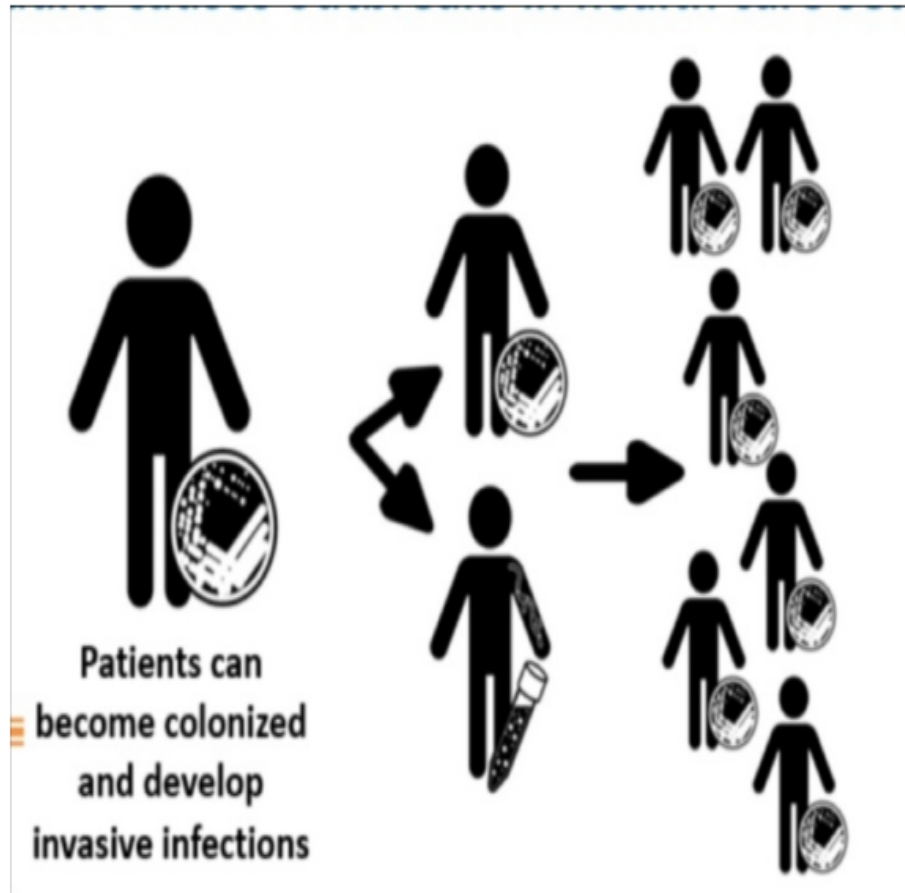


- Can survive over a month
- Some common disinfectants (quaternary ammonia compounds) don't work

Mobile equipment has been heavily implicated in transmission



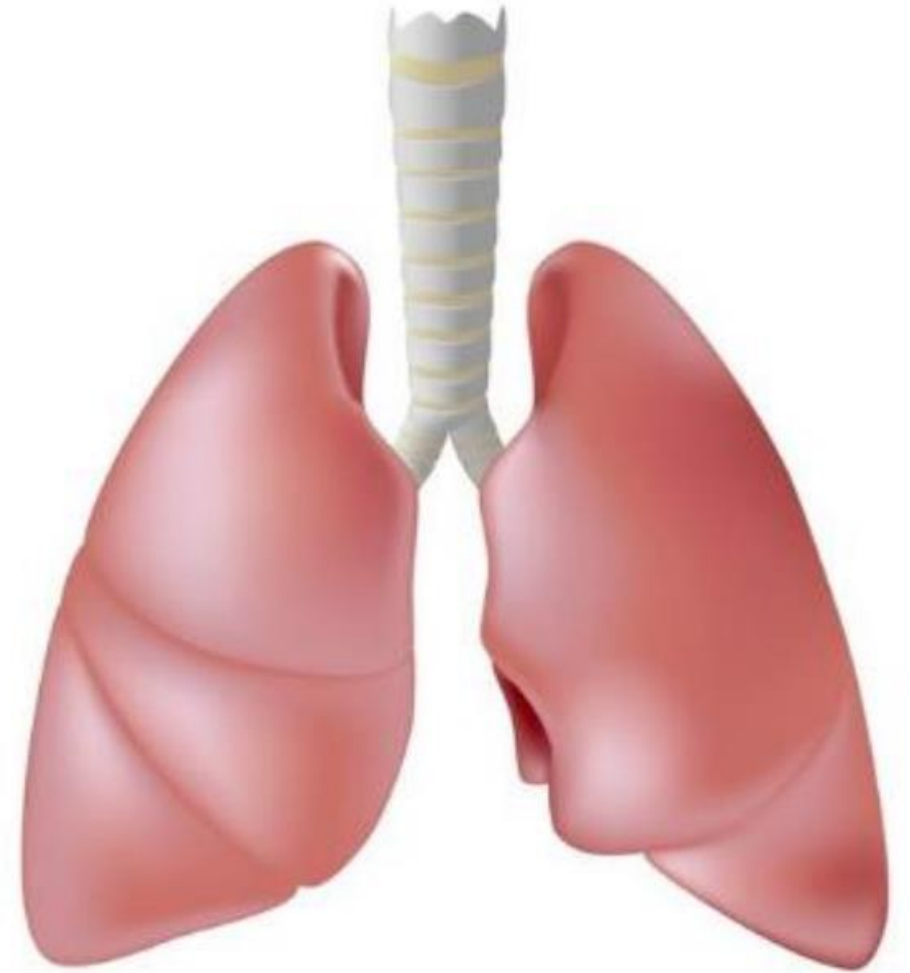
Spread of *Candida auris*



Spreads in healthcare settings

Transmission Through Organ Transplantation

- *C. auris* cultured from lungs shortly after transplant in Massachusetts
- No clear evidence of invasive *Candida* infection
- Donor lungs found to have had *C. auris* pre-transplant
- Donor from **Illinois**
- Isolate nearly identical to other Illinois isolates



C. auris - Symptoms

***C. auris* Infections**

- *C. auris* can cause infections in different areas of body such as bloodstream, open wounds, and ears
- Most common invasive infections symptoms are fever and chills that do not improve after antibiotic treatment
- Patients with invasive infections often already sick from other medical conditions

Symptoms of a *C. auris* infection depend on where in your body the fungus infects. Some symptoms could include

- Fever.
- Chills.
- Lethargy (extreme tiredness).
- Low blood pressure.
- High heart rate (tachycardia).
- Low body temperature (hypothermia).
- Pain, pressure or feeling of fullness in your ear (*C. auris* ear infection).

- *Candida auris* is an emerging multi-drug resistant yeast that can cause severe invasive infections associated with high mortality.
- *Candida auris* can survive on surfaces and medical equipment, spread from patient to patient and lead to outbreaks in healthcare settings.
- Risk of infection or colonization with *Candida auris* is greatest among our most vulnerable patients. These are patients with a.) extensive healthcare exposures; b.) infected or colonized with another MDRO; c.) invasive medical devices.
- *C. auris* colonization lasts for years and may be indefinite

Can cause invasive infections and high mortality

8% of colonized patients have positive clinical specimens of which half are bloodstream infections

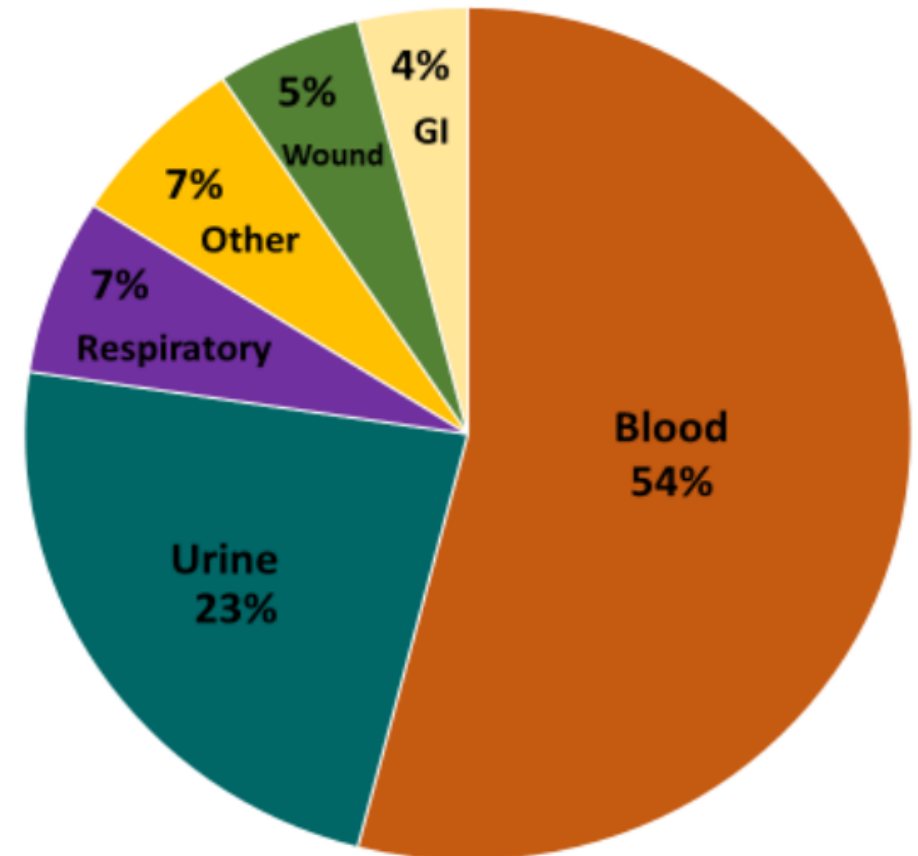
Mortality of invasive infections is ~40% within the first 30 days

Identification

Challenges with identification

- Yeast not determined to species level in many labs, except by request
- Sterile site isolates may only be performed by request
- Species from non-sterile isolates often not identified

Initial culture site of *C. auris* clinical cases



Colonization screening presents challenges

PCR or culture-based methods are available through CDC and public health labs

Few clinical labs now conducting screening using PCR

***C. auris* nationally notifiable**

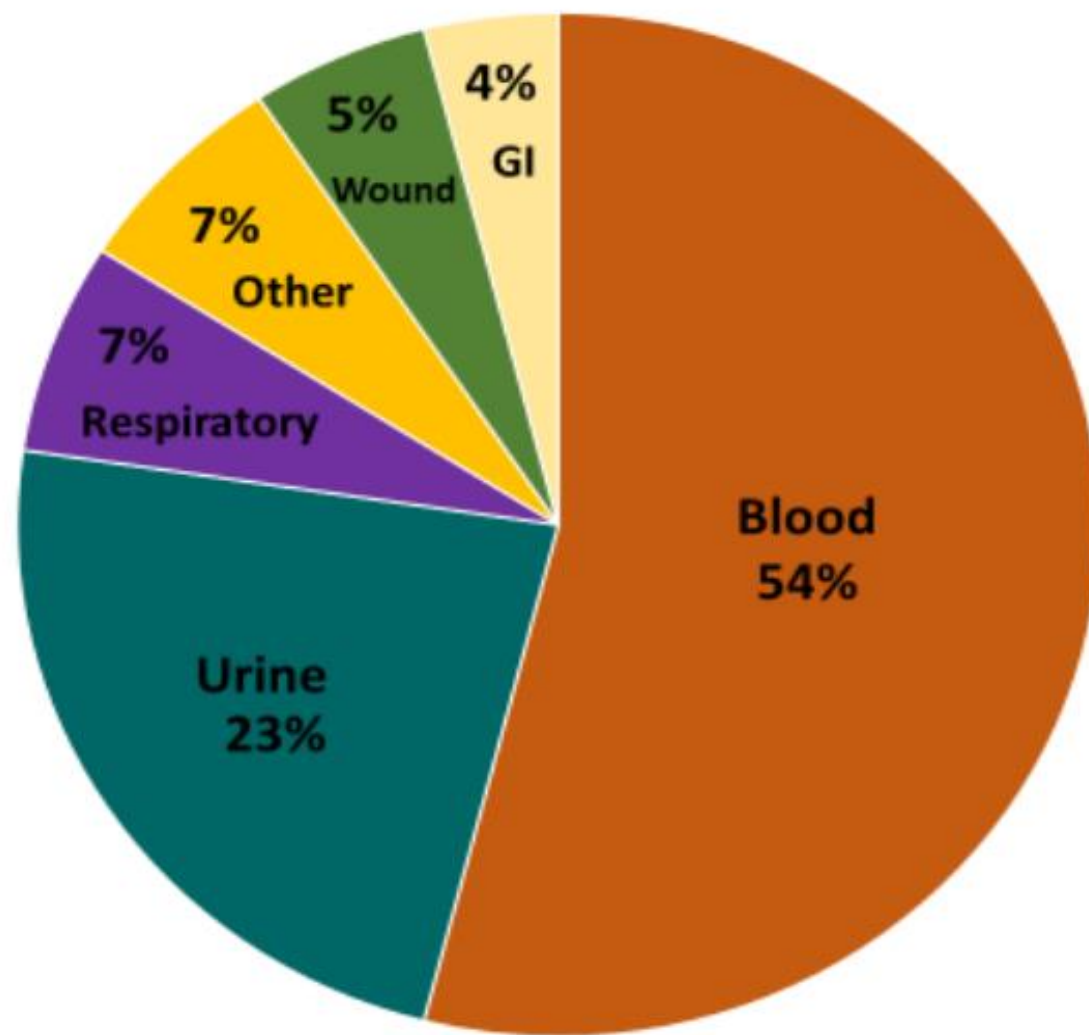


Management of C. auris

Misidentification

Identification Method	Organism <i>C. auris</i> can be misidentified as
Vitek 2 YST	<i>Candida haemulonii</i> <i>Candida duobushaemulonii</i>
API 20C	<i>Rhodotorula glutinis</i> (characteristic red color not present) <i>Candida sake</i>
BD Phoenix yeast identification system	<i>Candida haemulonii</i> <i>Candida catenulata</i>
MicroScan	<i>Candida famata</i> <i>Candida guilliermondii</i> <i>Candida lusitanae</i> <i>Candida parapsilosis</i>
RapID Yeast Plus	<i>Candida parapsilosis</i>

Initial culture site of *C. auris* clinical cases



Management of C. auris

THREE CLASSES OF ANTIFUNGALS

1



Azoles

2



Polyenes

3



Echinocandins

- **Azoles** (Ex. Fluconazole, Voriconazole, Posaconazole)
- **Echinocandins** (Ex. Micafungin, Caspofungin, Anidulofungin)
- **Polyenes** (Ex. Amphotericin B)

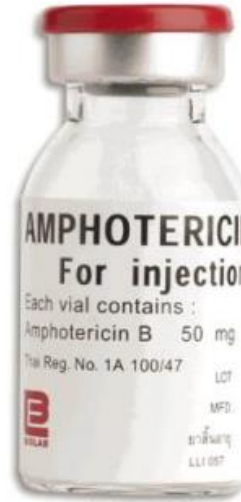
Resistance in the U.S.

1



87.6%
Azoles

2



33.7%
Polyenes

3



1.7%
Echinocandins

- 33% multidrug resistant
- 2 pan-resistance found in 2019

CDC *C. auris* management guidance

- Echinocandins are first line treatment
- AFST on every isolate
- Repeat cultures until documented clearance for invasive sites

Pan-resistance – all three classes

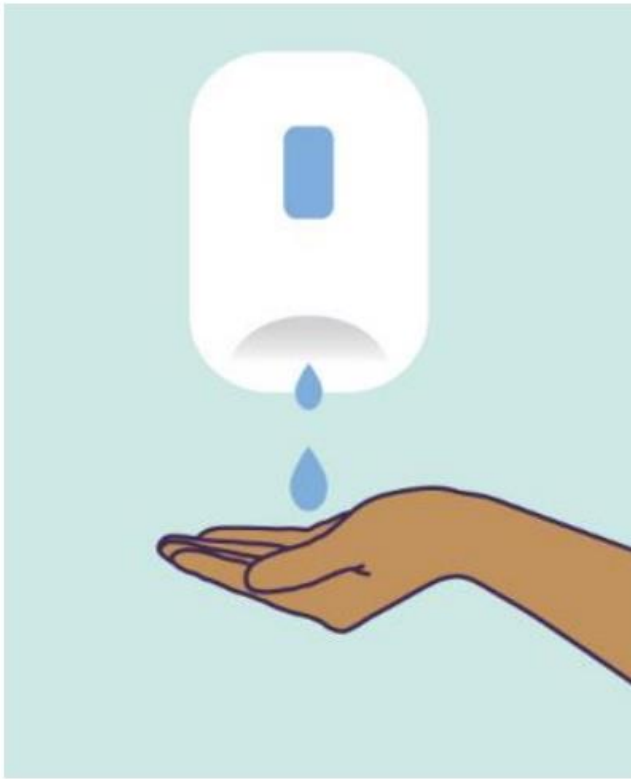
- CDC-confirmed pan-resistant *C. auris* cases in NY
- Cases were unrelated
- Developed resistance on echinocandin treatment
 - already resistant to fluconazole and amphotericin B
- No transmission of resistance seen
- Pan-resistance has also been reported from a few other countries

**Antibiotic
stewardship may be
important in the
prevention of
C. auris colonization.**

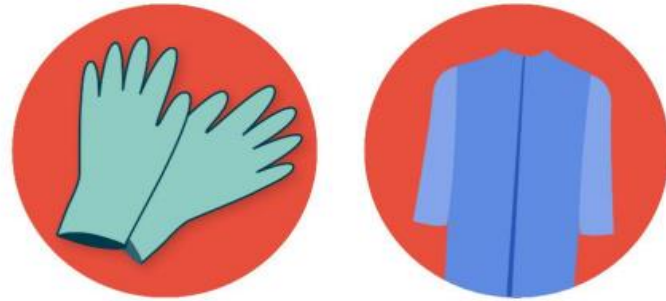


Infection prevention

Facility Level Prevention Strategies: Back to Basics



Hand Hygiene



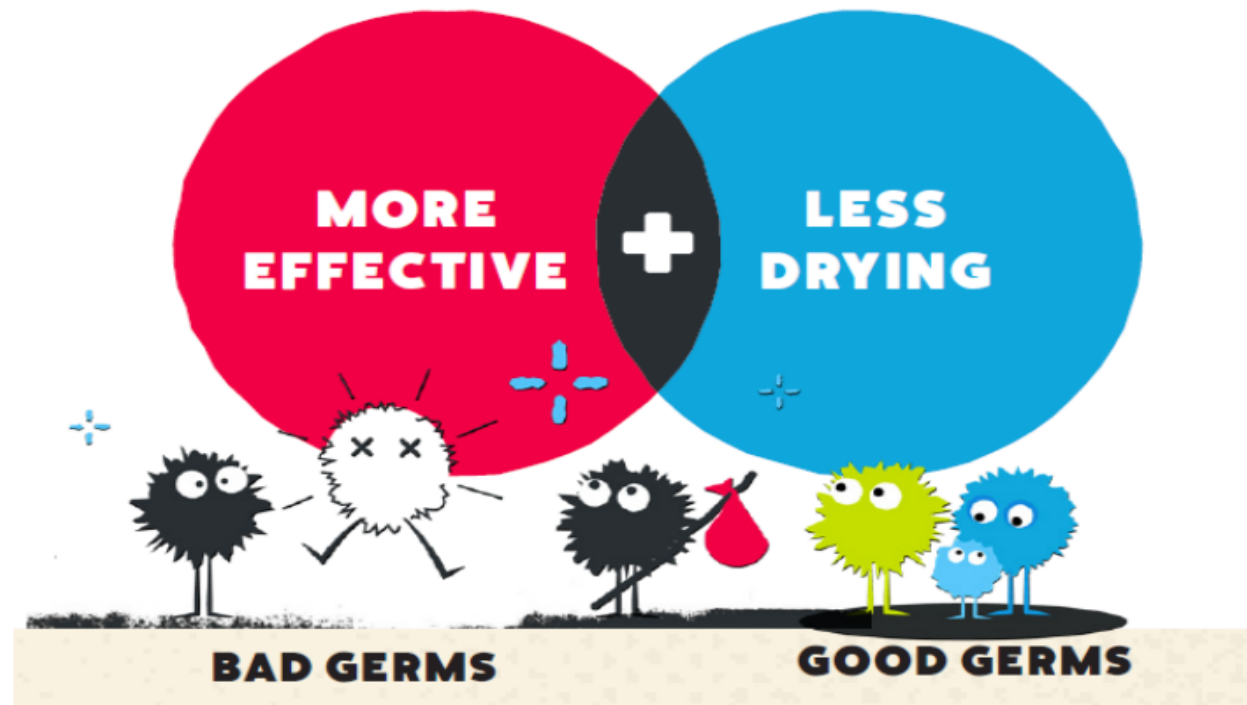
**Personal Protective
Equipment &
Precautions**



**Environmental
Cleaning &
Disinfection**

Hand Hygiene

Alcohol-based hand rub is preferred over soap and water except when hands are visibly soiled.



Using Alcohol-Based Hand Rub (ABHR)



**Apply product
to one hand.**



**Rub hands together, covering
all surfaces, until hands
and fingers feel dry.**



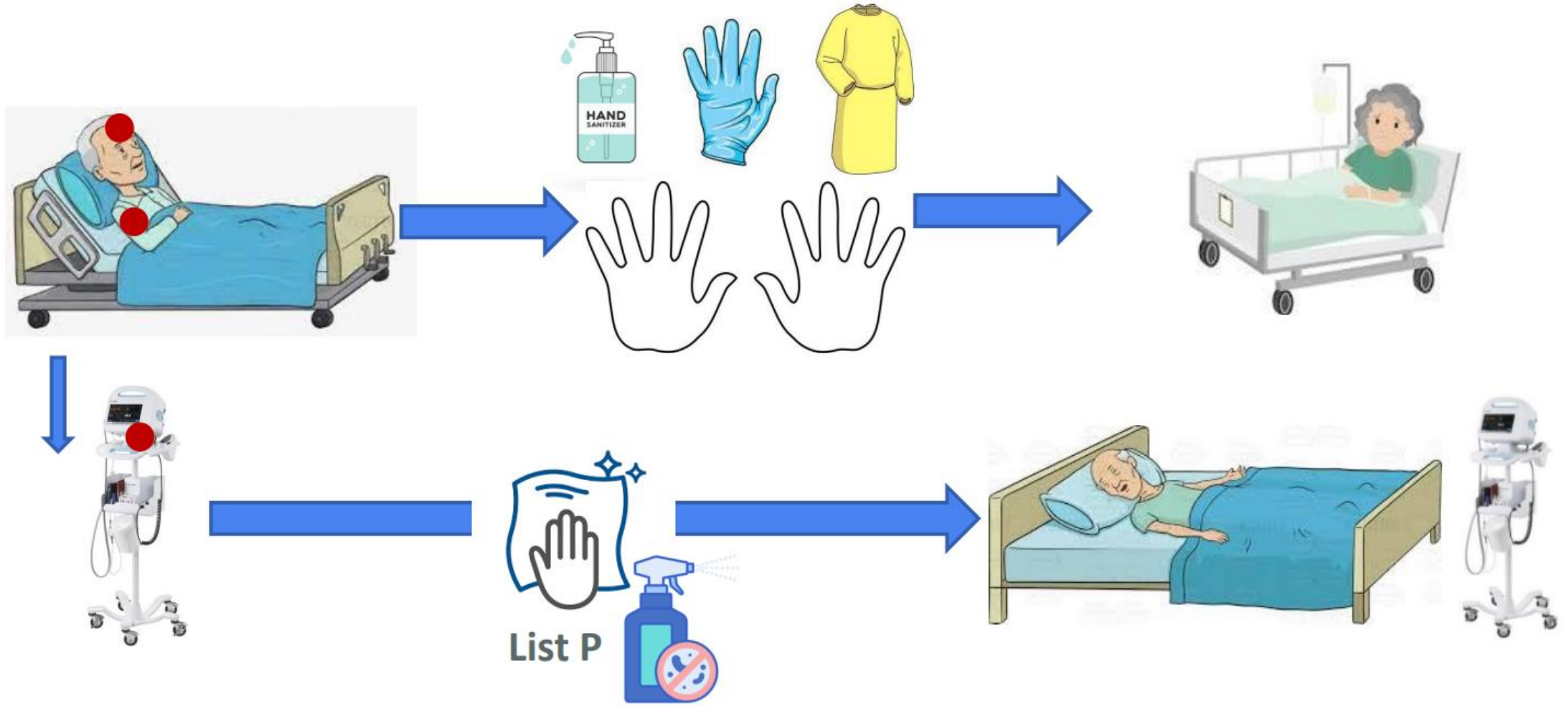
**Process should take
about 20 seconds.**

Contact Precautions are recommended for patients colonized/infected with *C. auris*



- Gown and gloves must be worn on every room entry

C. auris Colonized Residents and Transmission



Focus on High-Touch Areas



- Bed and chair rails
- Sink and toilet
- Bedside tables
- Call light
- Remote control and phone

Cleaning and Disinfection of Shared Medical Equipment

- Shared medical equipment cleaned and disinfected prior to use with another resident
- Easy access to cleaning/disinfectant products for all staff
- “Who cleans what?”



CLEANING PRACTICES

- Confirm that EPA list P products are being used on the unit. (List P: Antimicrobial Products Registered with EPA for Claims Against *Candida Auris*)
- Perform additional black light/UV spot audits to provide objective measurement of cleaning thoroughness
- Declutter patients' rooms

Establish clear responsibilities (WHO DOES WHAT) and frequencies for cleaning equipment and surfaces by EVS, nursing, respiratory therapy and other services involved in healthcare.



- Sometimes HCP don't know what they should be cleaning
- Make a list of all high-touch surfaces and equipment
- For each item indicate:
 - Frequency
 - Products to use (if different than routine)
 - Assignment to different HCP roles
- Share with all HCP with cleaning duties
 - Include both new and veteran HCP

Who Cleans What and When?				
<i>Template for healthcare facilities to ensure that all surfaces, devices, and equipment are properly cleaned and disinfected.</i> <i>Please modify this template as needed. Below are just some examples of various surfaces that need to be cleaned.</i>				
Facility name: _____		Unit: _____	Update date: _____ Appr: _____	
Area/Device/Equipment	EVS	Frequency	Nursing	Frequency
Anesthesia equipment and controls				
Bathroom sink				
Bed rail/controls				
Bed table				
Bedside cabinet & other furniture				
Bladder scanner				
Blood pressure cuffs, sphygmomanometer				
Call box, button, and cords				
Computer keyboard				
Computer monitor, keyboard, mouse, cart				
Corridor railing				
Dispensers for towels, soap, sanitizer, etc.				
Door knob/handle, push plates (in/out of room)				
Feeding pumps, stands				
Glove box holders				
Infusion pumps and control				
ISO holder				
IV poles				
Light switch				

It's new bug using old tricks

- Drug resistant, makes people sick, and spreads
- Similar to CRE, VRE, MRSA, and other drug resistant bugs
- We are still learning a lot about *C. auris*, but we also know how to control the spread of other similar germs
 - Many of the same principles can be applied to *C. auris*

